



UNITED STATES NAVY

# MEDICAL NEWS LETTER

Vol. 43

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No. 2

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## MEDICAL NEWS LETTER

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

I-M-P-O-R-T-A-N-T N-O-T-I-C-EU. S. Navy Medical News Letter Renewal Request Is Required

Existing regulations require that all Bureau and office mailing lists be checked and circularized once each year in order to eliminate erroneous and duplicate mailings.

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## F A I N T I N G

Juergen E. Thomas MD and E. Douglas Rooke MD, Section of Neurology, Mayo Clinic, Rochester, Minn. Proceedings of the Staff Meetings of The Mayo Clinic 38(19), September 11, 1963.

A brief disturbance in normal consciousness is one of the commoner casual ailments. When it is an isolated occurrence with an adequate explanation, the physician is seldom consulted. Most people are familiar with "fainting"—by which they mean any temporary disturbance in consciousness.

However, if the difficulty recurs it may become a matter for concern, and an evaluation of the significance of such brief spells is a frequent problem in almost any field of medical practice.

The majority of these disturbances are syncopal in nature but, even so, they are not all innocuous. It may be important to weigh such episodes as evidence of underlying disease and to distinguish—often on the basis of the history alone—between syncope, vertigo, various types of convulsive disorder, and other comparable conditions. Because of the prevalence of this problem, the authors review it as it presents itself to the neurologist. In this discussion, they consider the various possible mechanisms involved in the production of syncope, review some of the diseases that may be related to these episodes, and finally discuss the features that distinguish syncope from other types of episodic disturbance in consciousness.

The term "syncope" is used in this discussion to describe a clinical condition in which there is a rapid, even an abrupt, disturbance in consciousness. It is usually associated with pallor and perspiration, and the basic mechanism is an insufficient supply of blood to the vital centers in the brain. Several types of syncope are described among which the following are discussed in detail: vasodepressor syncope, postural syncope, primary and reflex cardiac syncope, cerebrovascular syncope, pressor-postpressor syncope, and micturition syncope.

### Vasopressor or Vasovagal Syncope

This is the classic benign faint. Among its predisposing factors are unaccustomed physical and mental exhaustion, chronic debility, a hot stuffy environment, anxiety, and head trauma. The immediate precipitating events vary widely and include psychologic shocks, painful stimuli, loss of blood, and prolonged motionless standing. Vasodepressor syncope can occur at any age, but young persons are particularly susceptible.

The clinical picture is remarkably uniform regardless of the cause. The patient is almost always in the upright position at the onset of the attack. He first notices a feeling of weakness and apprehension. This is soon followed by nausea, pallor, cold perspiration, and epigastric discomfort. Within a matter of seconds or minutes, lightheadedness and blurring of vision set in and, unless protective measures are taken, the patient slumps to the floor

unconscious. In the recumbent position, consciousness quickly returns, but such symptoms as weakness, nausea, and perspiration may linger for some time.

If one examines a person undergoing vasodepressor syncope under laboratory conditions, an initial rise in heart rate and blood pressure can be noted. Soon, however, blood pressure and heart rate fall precipitously and unconsciousness sets in. At this time, respiration is shallow, the pulse is weak, the face ghastly pale, the skin cold and sweaty, and the pupils respond poorly or not at all to light. Occasionally, urinary incontinence and minor convulsive twitching may be observed.

Physiologic studies (1, 2) suggest that in the initial phase of the syncopal syndrome there is insufficient return of blood to the heart, resulting in decreased cardiac filling. This, in turn, has been thought to effect reflex excitation of vasomotor brain-stem centers producing bradycardia, profuse perspiration, and active vasodilatation in the muscles. The decrease in total vascular resistance causes a drop in blood pressure which, in turn, leads to cerebral ischemia and syncope.

#### Orthostatic Syncope

In certain individuals, assumption of the erect position can precipitate a profound fall in blood pressure. Normally, when man assumes the upright position, intricate compensatory mechanisms swing into action and these serve to counteract gravitational forces upon the blood. If these mechanisms are intact but sluggish, symptoms such as dizziness, blurring of vision, and fainting may occur in response to postural changes. The writers call this situation poor postural adjustment. Although the simple postural faint is probably nothing but a variant of the previously discussed vasodepressor syncope, it is convenient to group it separately because of its characteristic precipitating factor.

Divorced from the poor postural adjustment is the classic orthostatic syndrome (orthostatic hypotension), a truly distinctive entity, occurring in patients in whom the compensatory cardiovascular mechanisms have been suspended by a disease of the autonomic nervous system (3). In this condition, regulation of blood pressure is often severely and persistently disturbed and other autonomic dysfunction such as impairment of sweating, impotence, and disturbance of the bowel and bladder is manifest. True orthostatic hypotension can be classified as secondary and primary or idiopathic. In the secondary group belong especially endocrinologic-metabolic disorders and diseases of the nervous system, such as tumorous, inflammatory, traumatic, and vascular lesions. The primary or idiopathic form is as yet insufficiently understood, but appears to be a separate entity with a characteristic evolution of symptoms and signs.

In the orthostatic syndrome, presyncopal symptoms are prominent but sometimes of very brief duration. Autonomic manifestations such as nausea, pallor, and perspiration are often absent. Occasionally, convulsive twitching can be observed during the faint. In the recumbent position,

cerebral circulation is quickly restored and consciousness returns. In severe orthostatic hypotension, syncope may occur so frequently as to preclude assumption of the upright position.

### Syncope Associated with Cardiac Dysfunction

There are four major groups of cardiac abnormalities giving rise to syncope: cardiac arrhythmias, ischemic heart disease, valvular heart disease, and congenital anomalies of the heart. In the presence of such disorders, cerebral blood flow and oxygen delivery to the brain may be seriously impaired. The lesion causing cardiac dysfunction can be situated in the heart itself or elsewhere in the body, influencing the heart on a reflex basis.

The onset of cardiac syncope is usually more rapid than the onset of other types of fainting. In fact, it may be so sudden that there seem to be no premonitory symptoms. If they do occur, they consist of varying degrees of dizziness, nausea, blurring of vision, and cardiac distress. The offset of the syncopal spell may also be rapid and in general the patient is not left with lingering postsyncopal discomfort. A fairly high proportion of patients with cardiac syncope exhibit minor convulsive movements during the spell. One of the characteristics of cardiac syncope is that it may occur when the patient is in either the recumbent or the upright position.

Syncope Caused by Cardiac Arrhythmias (Primary and Reflex). In the primary group belong the excessively fast and slow heart rates which may result in syncope from severely reduced cardiac output or from asystole during delay in transition from one rhythm to another. Any of these disturbances in rhythm may be transitory and are not necessarily found at a subsequent examination. In the paroxysmal auricular and ventricular arrhythmias (tachycardia and fibrillation) syncope may occur at the onset, in the midst, or at the offset of the attack. Heart rates in excess of 180 to 200 per minute will generally be necessary before consciousness becomes clouded or lost. Many patients, however, can tolerate such accelerated heart rates without significant subjective discomfort.

The faint in patients with excessively slow heart rates is secondary to damage of the atrioventricular conduction system with partial or complete heart block (Morgagni-Adams-Stokes syndrome). The duration of the asystole necessary to produce syncope varies from 5 to 15 seconds depending, to some degree, upon the patient's position (4, 5). The lesion responsible for the cardiac arrhythmias may interrupt the structural integrity of the heart permanently, or the defect may be reversible as in toxic processes or temporary ischemia.

Carotid Sinus Syncope. Among the disorders leading to cardiac syncope on a reflex basis, hyperirritability of the carotid sinus has been of special interest in the last few years. Digital stimulation of one or both carotid sinuses often leads to a reflex fall in blood pressure, slowing of heart rate, or both, and may be accompanied by mild dizziness and faintness. In some individuals, symptoms and cardiovascular signs are

profound, in which event the disorder is spoken of as "hyperirritable carotid sinus reflex." This occurs mostly in elderly patients, the majority of whom have evidence of organic heart disease and atherosclerosis of blood vessels. A hyperirritable reflex has also been found in patients with neoplastic and inflammatory masses of the neck, trauma to the region of the carotid sinus, and digitalis intoxication, while symptoms of dizziness and faintness are readily obtained by stimulation of a hyperirritable sinus, loss of consciousness is rare. It may rarely be initiated by turning the head, wearing a tight collar, or shaving. As a rule, prodromal symptoms, if present, are of short duration consisting of dizziness, faintness and epigastric distress. Unconsciousness is brief.

Three types of carotid sinus syncope are discussed. The most common is the "cardioinhibitory type," in which vagal slowing of the heart occurs and the blood pressure falls. The second, the "vasodepressor type," seems to be rare; it results from a drop in blood pressure without change in the cardiac rate. In many ways, this type is similar to vasovagal syncope but occurs on stimulation of the carotid sinus and affects primarily the older age group.

According to Weiss and Baker (6), there is a third type, the "cerebral type" of carotid sinus syncope which is not accompanied by either blood pressure fall or cardiac changes. In recent years, the existence of this cerebral form has been seriously disputed. Like others (7, 8), the authors could not convince themselves that such a type actually exists. They tend to agree with those who suggest that unconsciousness occurs on the basis of compromised cerebral circulation from digital irritation or obstruction of the carotid artery when the test for hypersensitive carotid sinus reflex is carried out.

Glossopharyngeal-Vagal Syncope. An interesting, though rare, type of reflex syncope is that associated with glossopharyngeal neuralgia (9, 10). Fainting occurs concomitantly with pain that affects the base of the tongue, the pharynx, tonsillar area, and the ear. An electrocardiogram recorded during a syncopal spell discloses bradycardia or asystole. Complete relief of pain and syncope is usually obtained by sectioning the glossopharyngeal nerve. It has been suggested that the cardiovascular effects of the syndrome are attributable to excitation of the dorsal motor nucleus of the vagus nerve by way of secondary afferent collateral from the nucleus solitarius, producing asystole through vagal inhibition (10).

Other types of reflexly induced syncope, mediated through the vagal system, have occasionally been described in pharyngeal, esophageal, laryngeal, bronchial, and mediastinal lesions, during bronchoscopy and esophagoscopy, "needling" of body cavities, following ocular pressure, and in digitalis intoxication.

Also, pleural and pulmonary processes, such as pulmonary embolism, have been said to be associated with syncope. Loss of consciousness is usually abrupt in onset and of short duration. In clinical practice, these forms are exceedingly rare.

Syncope Associated with Ischemic Heart Disease. In coronary insufficiency, syncope is provoked by exertion and is preceded by dyspnea and anginal pain (11). Unconsciousness may last for many minutes and may be accompanied by convulsive twitching. If syncope accompanies myocardial infarction, it usually occurs at the onset, being associated with peripheral circulatory failure. Myocardial infarction should always be suspected in a patient in whom low blood pressure, weak pulse, pallor, and sweating persist for a long time after syncope.

Syncope Associated with Valvular Heart Disease. Aortic stenosis is the most common offender in this group. Syncope occurs in 10% to 25% of cases and is almost always induced by physical activity (effort syncope). The syncopal spell is ushered in by dyspnea, weakness, dizziness, and angina pectoris (12). The cause for the faint is believed to lie either in inability to increase cardiac output with exertion (12), a hyperactive carotid sinus reflex (13), or a vasovagal reflex elicited by pressure changes in the heart (1). Rarely, mitral stenosis gives rise to syncope because of a markedly decreased cardiac output or a ball-valve type of thrombus. Myxomas of the auricles likewise are known to act as ball-valve obstructions and may cause syncope.

Syncope Associated with Congenital Heart Disease. Transient loss of consciousness has been most commonly observed with the tetralogy and pentalogy of Fallot, but may occur also in truncus arteriosus, Eisenmenger's complex, pulmonary stenosis, transposition of the great vessels, and ventricular septal defects. Usually, it becomes manifest in early childhood and is precipitated by physical activities. Especially, the little patients with tetralogy of Fallot quickly learn that certain positions, such as squatting, will help alleviate an attack. This maneuver improves venous return to the heart and elevates systemic arterial pressure. Stead (14) has suggested that the insufficient arterial oxygen saturation causes cerebral hypoxia and produces the faint.

#### Syncope Associated with Primary Pulmonary Hypertension

This, too, is characteristically an effort syncope. Dresdale and colleagues (15) found it in 20% of their patients with this disease. Often, it is preceded by dizziness, epigastric distress, and faintness, and may be followed by nausea, vomiting, and abdominal cramps (15, 16). The attacks last from a few seconds to several minutes. Effort syncope is highly suggestive of primary pulmonary hypertension if the patient is found to have dilation of the pulmonary artery, accentuation of the pulmonary second sound, or right ventricular hypertrophy. The cause for the faint seems to lie in impaired cardiac output (14) which may fall to levels at which compensatory vasoconstriction is not able to maintain sufficient arterial pressure (1).

#### Syncope Associated with Involvement of the Cerebrovascular System

In cerebrovascular diseases as a group, fainting is an uncommon clinical manifestation. When it occurs, there is usually partial occlusion of some of

the large vessels of the neck. The more severely these vessels are affected, the more likely will syncope be a part of the clinical picture. This general rule is best exemplified in the "aortic arch syndrome" (pulseless disease) in which occlusive vascular processes involve the aortic arch and markedly narrow the ostia of its main branches including the innominate, subclavian, and common carotid arteries. Syncope occurs in as high as 40% of these cases (17) and is characteristically induced by physical activity. It is often preceded by lightheadedness, blurring of vision, and confusion.

Stenosis or occlusion of the vertebral arteries has been held responsible for those syncopal attacks occurring in relation to certain positions of the head, especially hyperextension and lateral rotation. Fainting in patients with the Klippel-Feil syndrome (18, 19), a congenital deformity of the upper cervical spine occasionally associated with an anomaly of the spinal cord, has been explained on that basis. Unterharnscheidt and co-workers (20) observed patients in whom, on turning the head, a symptom complex could be elicited consisting of piercing neck pain, a hot flush radiating into the head, nausea, possible vomiting, vertigo, visual scotomas, and finally, unconsciousness. They reported having observed such a syndrome in degenerative cervical arthritis and after trauma to the cervical spine.

In occlusive disease of the carotid artery system, recurrent syncope is rare and probably occurs only when the disease is bilateral unless there is superadded hypersensitivity of the carotid sinus. Webster and Guardian (21) have been using syncope provoked by digital compression of the carotid artery as a diagnostic sign of occlusive vascular disease. They maintain that if syncope can be induced by manual compression of the carotid artery on the side of the neurologic symptoms and signs, occlusive disease of the contralateral carotid or anterior cerebral arteries exists. They also noted that syncope occurred upon both right and left carotid compression in patients with occlusion of the basilar artery. The hazards of such tests are thought by many—including the authors—to outweigh the diagnostic advantages. Brief mention should be made of the acute hypertensive encephalopathy in which syncope has been reported as occurring as part of the transient alterations of cerebral function and as lasting from minutes to hours.

#### Pressor-Postpressor Syncope

Symptoms such as lightheadedness and blurring of vision are seen in some individuals during strenuous activities such as laughing, coughing, straining at stool, vomiting, sneezing, and lifting. Occasionally, these symptoms may culminate in syncope. Best known is "tussive syncope," the faint accompanying an attack of coughing. This affects almost exclusively men after the age of 40 years who are of pyknic or athletic habitus and capable of considerable muscular effort. Chronic bronchopulmonary disease may be a predisposing factor. The attack is initiated by a series of strenuous expiratory coughs without inspiratory relief and is not necessarily prolonged. The face of the patient becomes congested, his eyes tear, he seems to be dazed, and finally

at the height of the coughing attack or at its cessation, he slumps to the floor unconscious and may display convulsive twitching. Recovery is prompt. These attacks may occur when the patient is in the erect or recumbent position. The cause of tussive syncope and other pressor symptoms is believed to lie in the greatly increased intrathoracic pressure which results in decreased venous return to the heart, diminution in cardiac output, compromised intracranial circulation and cerebral anoxia (22, 23).

Breath-holding spells are thought to arise on a similar pathophysiological basis. They occur generally in children between 2 and 5 years old and, as a rule, are precipitated by emotional stimuli such as fear and frustration. At the end of a vigorous period of crying, the child holds his breath in prolonged expiration. Suddenly his eyes roll up and he turns deeply cyanotic and loses consciousness. He may have brief twitching and incontinence of urine. Within seconds, the normal state is restored except for occasional transient lethargy.

### Micturition Syncope

This is said to occur just before, during, or right after urination in the upright position; the person affected has almost always been recumbent for some time. It has been suggested that this type of fainting is caused by a circulatory collapse that occurs when the postural adaptive mechanisms are not allowed their usual period of adjustment (24). Vasomotor reflexes from the bladder itself have also been thought to play a contributing part. Consciousness is said to be lost abruptly or after symptoms, such as dizziness, weakness and nausea, and injuries have been sustained. This type of syncope, the authors believe, is rare and it is doubtful whether it constitutes a separate entity. More likely it represents a simple postural faint.

(To be continued)

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\* \* \* \* \*

Filariasis of the Testis - A Case Report

CAPT W.E. Fraser MC USN, Chief of Urology; U.S. Naval Hospital, Bethesda, Md., and CDR L.A. Jachowski Jr, MSC USN, Parasitology Department, Naval Medical Research Institute, Bethesda, Md.

A 33-year old Marine officer was admitted to the Urology Service, U.S. Naval Hospital, Bethesda, on 3 August 1963 for scrotal exploration. A small painless nodule associated with the right testis had been discovered by the patient 48 hours prior to admission. Findings of the physical examination were normal except for a left inguinal scar and the small mass related to the right testis. At operation, a small cystic mass attached to the tunica vaginalis was excised.

Examination of sections of the specimen revealed one or more worms, identified as filariae, in the cyst (Figure 1). Blood smears were then taken at 1200 and 2400 hours. They did not contain microfilariae. A serum sample was reactive (titer 1:8) to a filarial antigen in the slide flocculation test. Past history of the patient included tours of duty in Korea (1953-1954) and in Okinawa (1962-1963). While stationed in Okinawa, he also spent one week in the Philippines and two months in Japan. In Okinawa, his duties included frequent night maneuvers. Except for recent symptoms of cystitis, the history was noncontributory. The patient had no clinical manifestations of filariasis and received no antifilarial treatment. Recovery from surgery was rapid and uneventful.

**Discussion**

The patient was admitted with a provisional diagnosis of neoplasm, testis. Surgical treatment was definitely indicated because a high percentage of nodules of the testis are malignant (1). Evidence suggests that the infection

probably was acquired while the patient participated in night maneuvers in Okinawa. First, Wuchereria bancrofti, which frequently causes genital lesions, is endemic on the Island. It does not occur in those areas of Japan and the Philippines visited by the patient. Also, this was not an old infection. The worms in the section had been viable at the time the nodule was preserved. Moreover, sections through the uterus of a worm showed developing microfilariae, yet no microfilariae were detected in blood smears.

Figure 1

Section of Nodule Showing Sections  
of Adult Filaria Worms



This case closely parallels one described by Borski and Tipton (2). Their patient was an Army technician who also had a painless nodule in the testis. The pathologic diagnosis was filariasis. Thus, in servicemen with histories of overseas duties, filariasis must be considered as one of the causative agents of benign lesions of the testis.

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\* \* \* \* \*

**FROM THE NOTE BOOK**

The following message from President Johnson has been received from the Office of the Under Secretary of the Navy, The Honorable Paul B. Fay Jr.

**A Message from President Johnson****"Memorandum to Heads of Departments and Agencies:**

I ask that you convey this personal message to all of your employees:

In these first days, men and women of all ranks within the government have asked me, 'What can I do to help?' Many more of you, deeply committed to the Federal service, are undoubtedly asking yourselves the same question. It is impossible for me to make a direct and personal response to all of you, much as I would like to do so. Yet there is an answer which I would like to express to every employee in every agency at every location in the Federal Government. It is simply this: 'Give your best to your job and your country.'

As your Chief Executive, I will do my utmost to maintain the high quality and character of the career service in the government and to advance its usefulness through improvement. I will look to those who direct the day to day activities of this great work force and to the Chairman of the Civil Service Commission for continuing reports and recommendations to assist me in this purpose.

We have a great resource of abilities and talents among the people serving our Federal Government. We have career systems to assure continuity of people and programs. We are organized for the job and the work is before us. President Kennedy did not shrink from his responsibilities, but welcomed them, and he would not have us shrink from carrying forward the great work he began so well. I say to you as I said to the Congress: 'Let us continue'."

—TIO, BuMed, 30 December 1963

\* \* \* \* \*

**Surgeons General of the Past**

By E. P. Kuhn JO2 USN

Charles Francis Stokes, eighteenth Chief of the Bureau of Medicine and Surgery and fourteenth Surgeon General of the Navy, was born in Brooklyn, New York on February 20, 1863. Before interning at Bellevue Hospital, he received his medical degree from the College of Physicians and Surgeons

in New York. On February 1, 1889, President Grover Cleveland signed his commission and appointed him an assistant surgeon from New York. He was first assigned to the USS MINNESOTA which, at that time, was receiving ship at the New York Navy Yard. Then came duty at the U.S. Naval Hospitals at Mare Island and Yokohama, Japan.

The Spanish-American War found Doctor Stokes serving as operating surgeon on the USS SOLACE, the first of our hospital ships to fly the flag of the American Red Cross. In 1908, President Theodore Roosevelt sent the Great White Fleet on a cruise around the world. Included in the fleet was the hospital ship USS RELIEF commanded by the soon-to-be Surgeon General. On February 5, 1910, President Taft appointed him as Surgeon General of the U.S. Navy in which capacity he served until February 6, 1914.

Admiral Stokes is best remembered as inventor of the Stokes stretcher which has been used throughout the Navy to this day. It has been of remarkable value in transporting sick and injured up and down narrow ladders and through small and otherwise poorly accessible areas. Examples of the latter are manholes and hatches aboard ship, firerooms, fighting tops, and turrets. Secured in this stretcher, a patient can be transferred by high line from one ship to another on the high seas or lowered into a boat in comfort and safety. Equipped with simple and ingenious fittings, the stretcher may be adjusted to combine splinting for fractures with the function of a litter for transportation. For its many practical applications in wartime or peace, the Stokes stretcher has been copied by a number of foreign navies.

Former Surgeon General Rixey had accomplished many advances to improve the efficiency of the Navy Medical Department. Admiral Stokes, as his successor, likewise pursued a vigorous progressive policy. High standards were maintained for commission and active duty in the Medical Corps; only candidates who were graduates from excellent medical schools and who were capable of passing rigid physical and professional examinations were accepted. The newly commissioned Hospital Corps School at Norfolk, Va., was utilized to the utmost in training Hospital Corps personnel; a majority of chief pharmacists of the Navy for many years were alumni of this school.

During Surgeon General Stokes' administration, the U. S. Naval Hospital, Pearl Harbor was planned and constructed. In addition, plans were laid down for construction of the USS RELIEF, the first vessel to be designed and built as a hospital ship from the keel up. Previously, these ships had been converted from liners.

On the evening of May 5, 1913, in the New Willard Hotel, Washington, D. C., more than three hundred distinguished surgeons from the United States and Canada gathered by special invitation to discuss the formation of a new surgical organization to be called the American College of Surgeons. Before the evening was over, the College had been founded, ground rules for Fellowship had been established, and Officers and the Board of Regents elected. Surgeon General Stokes was a member of that first Board of Regents, along with sixteen other illustrious surgeons who gave such great impetus to the development of modern aseptic surgery in the Western Hemisphere.

Retiring in June 1917, Admiral Stokes lived in New York City where he died on October 29, 1931. Interment was in Arlington National Cemetery.

Active Duty Officers Receive American  
Board Certifications

American Board of Anesthesiology

LT Charles P. Larson Jr, MC USNR

American Board of Dermatology

CDR Fred R. Edens MC USN  
LCDR William S. Brothers MC USN  
LT Rudolph J. Scrimenti MC USNR

American Board of Internal Medicine

LCDR Arnold I. Meisler MC USNR

American Board of Obstetrics and Gynecology

LCDR John F. Wurzel MC USN

American Board of Ophthalmology

LCDR Charles P. Hodgkinson MC USNR  
LCDR James C. King MC USN  
LCDR Spencer F. Maddox Jr, MC USN

American Board of Otolaryngology

LT Lawrence R. Boies MC USNR  
LT Theodore J. Eckberg MC USNR  
LT John W. Sabatine Jr, MC USNR  
LT Dean H. ZoBell MC USNR

American Board of Pathology

LCDR Jude R. Hayes MC USN

American Board of Pediatrics

LCDR Henry D. Knox MC USN

American Board of Surgery

LCDR Richard J. Miller MC USN  
LCDR Stephen J. Mucha MC USN  
LCDR Bernard S. Shapiro MC USNR

American Board of Thoracic Surgery

LCDR Ernest H. Meese MC USN



## MISCELLANY

### Space and Astronautics Orientation Course

This course has been established to give senior officers of the Navy a better understanding of this new technology, its application to naval warfare, and its important role in national defense. The course is in consonance with the Navy's global mission and emphasizes the significant impact of astronautics on seapower. It is primarily designed for those senior officers who have not had the opportunity to gain knowledge of astronautics and current Space programs. A highlight of the course is a visit to the space vehicle launch and control facilities at Point Arguello Naval Missile Facility and at Vandenberg Air Force Base.

<u>Location:</u>	U. S. Naval Missile Center, Point Mugu, Calif.
<u>Duration of Course:</u>	Four days (Tuesday - Friday)
<u>Convening Dates of Course:</u>	
	25 February 1964
	10 March 1964
	24 March 1964
<u>BUMED Quota:</u>	ONE for each class
<u>Deadline Date to Apply:</u>	Immediately for the 25 February course, and 6 weeks in advance for the remaining courses.
<u>Eligibility:</u>	Rank of Commander and above. TOP SECRET security clearance required.

In view of the shortage of travel funds for Fiscal Year 1964, only a limited number of officers can be authorized to attend these courses on travel and per diem orders chargeable against Bureau of Medicine and Surgery funds. Eligible and interested officers who cannot be provided with travel orders to attend at Navy expense may be issued Authorization Orders by their Commanding Officers following confirmation by this Bureau that space is available in each case. Requests should be forwarded in accordance with BUMED INSTRUCTION 1520.8 and comply with the deadline dates indicated above. All requests must indicate that a security clearance of TOP SECRET has been granted to the officer requesting attendance, and if Bachelor Officer's Quarters are desired. —Training Branch, Professional Division, BuMed.

### Military Surgeons Convene

Rear Admiral Calvin B. Galloway MC USN, Commanding Officer of the National Naval Medical Center, Bethesda, Md., has completed his term of office as President of the Association of Military Surgeons of the United States. His successor is Colonel Robert C. Kimberly MD MD NG of Baltimore, Md. Rear Admiral Robert B. Brown MC USN was General Chairman of the Committee on Arrangements for the 70th Annual Meeting of the Association held at the Statler-Hilton Hotel, Washington, D.C. on 4, 5, and 6 November 1963. Captain Paul L. Austin MSC USN was Assistant to the General Chairman. Captain John R. Seal MC USN was Chairman of the Scientific Program Committee.

The theme of the meeting was "Medical Research Today - Military Resource Tomorrow." Many leaders in the Federal medical services and civilian medicine of the United States made presentations and participated in panel discussions on the varied aspects of military medicine, dentistry, veterinary medicine, pharmacy, and the paramedical sciences. On the opening morning "Panel of Chiefs of Federal Medical Services," an address on the research programs of the Navy Medical Department was delivered by Rear Admiral Edward C. Kenney MC USN, Surgeon General of the Navy. Other speakers on the panel were the Honorable Shirley C. Fisk MD, Deputy Assistant Secretary of Defense (Health and Medical); Brigadier General Conn L. Milburn MC USA, Deputy Surgeon General of the Army (representing LT General Leonard D. Heaton MC USA, Surgeon General of the Army); Major General Oliver K. Niess MC U.S. Air Force, Surgeon General of the Air Force; Luther L. Terry MD, Surgeon General of the U.S. Public Health Service; and Joseph H. McNinch MD, Chief Medical Officer of the Veterans Administration.

One of the prominent and colorful features of the convention was the convocation in honor of the international delegates, representing the armed services medical departments of NATO and SEATO nations. This event was followed by the International Luncheon presided over by Admiral Galloway who introduced the guest speaker, Rear Admiral Lloyd V. Berkner, U.S. Naval Reserve, BS, D Eng, PhD, LL D, President, Graduate Research Center of the Southwest, Dallas, Texas. Admiral Berkner gave a brilliant talk on "Medical Science - Its Place in the Scientific Revolution" which was received with great enthusiasm.

### Honors and Awards

Sir Henry Wellcome Medal and Prize. A silver medal, scroll, and honorarium of \$500 are awarded for the best essay on a subject pertaining to military medicine. Recipient: Captain Sidney I. Brody MC USN, Staff Medical Officer 2nd Marine Aircraft Wing, Station Hospital, Marine Corps Air Station, Cherry Point, N.C. The essay was entitled, "Sore Throat of Myofascial Origin."

The Founders' Medal is awarded for outstanding contributions to military medicine and distinguished service to the Association. Recipient: Rear Admiral Robert B. Brown MC USN, Assistant Chief of the Bureau of Medicine and Surgery for Personnel and Professional Operations; and Captain John R. Seal MC USN, Commanding Officer, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

The Andrew Craigie Award is named in honor of the first Apothecary General of America's military forces who served under General George Washington during the Revolutionary War. This award consists of a plaque and an honorarium of \$500, and is given in recognition of outstanding accomplishment in the advancement of professional pharmacy in the Federal Government. Recipient: Commander John J. Beretta MSC USN, Defense Medical Supply Center, Brooklyn, N. Y.

The William C. Porter Lecture was established to honor a pioneer in military psychiatry. The 1963 lecture was given by Captain Ralph L. Christy MC USN, Chief, Neuropsychiatric Branch, Professional Division, Bureau of Medicine and Surgery, on the subject, "The Vital Role of the Military Medical Officer in Support of Command and the Military Mission."

\* \* \* \* \*

Naval Medical Officers Assist in Joint  
USN-IIN Civic Action Operations

The USS STRONG of Destroyer Squadron Four and based in Charleston, S. C. participated in Joint U. S. Navy-Imperial Iranian Naval Civic Action operations, 24 November - 1 December 1963 while serving a tour in the Red Sea-Persian Gulf Area under operational control of Commander, Naval Forces, Middle East. The Operation was conducted in the company of the Imperial Iranian Naval Frigate BABR.

The Iranian Civic Action is continuing the program under the Director, Iranian SUPREG Commander. Efforts are coordinated with governments, and civic and charitable organizations and agencies assisted by Charmish, Military Assistance Advisory Group, U. S. Aid, and CARE. The need for this joint operation stemmed from effects of prolonged drought, paucity of trained medical personnel and facilities, and relative inaccessibility (except by sea) of southern coastal towns and islands. Due to consecutive drought years, there were crop failures, starvation of livestock, and widespread malnutrition.

In early October, LT Michael D. Pollane MC USNR embarked on the USS STRONG with nearly two tons of medical supplies provided by the Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C., Operation Handclasp, and World Medical Relief, Inc. LCDR S. J. Kendra MC USN of the Preventive Medicine Unit in Naples reported to the STRONG at Karachi, Pakistan for temporary additional duty on 23 November 1963.

The STRONG joined the Imperial Iranian Ship BABR on 24 November at Chahbahar and embarked Dr. Sydney Thomas and Dr. Bruce Jessup. The medical personnel organized into three teams employing maximum medical diversity. The initial survey of population centers was to determine medical needs and establish clinics to administer aid and distribute medical supplies. The team of doctors treated approximately 1200 in Chahbahar. The most serious medical conditions were noted in children under 12 years of age, including malnutrition and trachoma. STRONG and BABR departed Chahbahar on 25 November and arrived in Jask on 26 November. Due to shallow beaches, rubber life rafts were used to land supplies; on one occasion, doctors were carried ashore on the shoulders of native porters. Using a newly constructed but unmanned and unequipped hospital building, the doctors and hospitalmen set up a Pediatric tent and Internal Medicine and Surgical Clinics.

Two other medical teams visited nearby villages, Old Jask, Yekbugi, Yekda, and Bahar. The ship departed Jask on 27 November and arrived at Bandar Abbas—a city of approximately 10,000—on 28 November. The teams assisted limited medical facilities in the city; these included five local physicians and hospital. They visited off-shore islands of Hormuz, Laral, and Qeshm. In addition to medical assistance, representatives of Federal Lion and Sun Society, Iranian—equivalent to the American Red Cross and CARE—assisted by Iranian Naval personnel, distributed food and clothing. Handclasp dolls, English text and library books, and Navy League kites were presented to school children. STRONG personnel repaired an inoperable X-ray machine and operating-room air conditioners at the Bandar Abbas Hospital where the temperature reaches 130°F. Other crewmen repaired electrical wiring, replaced window screens, and repainted the Girls High School.

At a conference concluding the Operation, Governor General Nawab, Governor of the Southwestern District of Iran, expressed pleasure at the success of the Operation and considered the dedication of United States personnel—even in the time of mourning—a fitting memorial to the late President John F. Kennedy. General Eckhart USA, Charmish, Tehran, in commending USS STRONG for their part in this Operation, said, "Medical treatment to approximately 5190 Iranians during this trial Operation constitutes a new milestone in the joint US/Iranian Civic Action Program."

LT Pollane was born in New York City in 1938. He received his BS from Georgetown University, Washington, D. C., in 1958 and his MD in 1962. He served his internship at Meadowbrook Hospital, Hempstead, L. I., N. Y., and was commissioned LT MC USNR on August 7, 1963 from the Naval Recruiting Station, New York, N. Y.—Technical Information Office, BuMed

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Health Problems of the Americas. In Latin America, one child in seven dies before reaching the age of five, the major causes of death being protein-calorie malnutrition and the diarrheal diseases. One of the aims of a ten-year public health plan recently adopted for the Americas is a 50% reduction in infant mortality by 1970.

—WHO Chronicle, November 1963

Soaps Versus Detergents - A Warning

The following statement is taken from the National Clearinghouse for Poison Control Centers, DHEW, November - December 1963.

For some time, the National Clearinghouse has refrained from advocating the use of soap or soap-suds for induction of emesis. This negativity was not the result of a judgment on the effectiveness of soap-suds, but out of apprehension that there could be confusion between "soaps" and "detergents." Reports received at the National Clearinghouse on the accidental ingestion of detergents, for the most part, have not shown any serious effects, nor have they shown proficiency in producing vomiting. On the other hand, some household cleaners, including dishwashing machine detergents, might cause serious injury if confused with what has become the generic name of "soap."

Recently, several reports have been received in which detergents were administered when soap-suds enemas were prescribed. It is believed that this type of error could produce significant injury. Again, without judging the effectiveness of soap-suds enemas, the National Clearinghouse would like to caution those physicians prescribing them to give patients very specific instructions in preparing such enemas. —Medicine Branch, ProfDiv, BuMed

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First Training Program for Psychiatric-Mental Health Nursing Research at NYU

The department of nurse education of New York University's School of Education has received a grant from the National Institute of Mental Health to establish the nation's first training program for research in psychiatric-mental health nursing. The primary function of the program will be development of nurse-researchers and contribution of new knowledge to psychiatric-mental health nursing. Activities, including seminars and conferences, will be planned this year under an initial grant of \$18,534 from the Institute.

Mrs. Florence Downs, Director of the program, explains that "The complexity of knowledge and skills essential to fulfilling current dimensions of nursing practice demands principles arrived at by scientific research. A concept of nursing as a learned profession is replacing the traditional concept of nursing as 'doing.' "

Sixty-four doctoral candidates are enrolled in the department of nurse education, of whom twenty-one are majoring in psychiatric-mental health nursing. Twenty-six master's degree candidates also are enrolled in this field of study.

\* \* \* \* \*

**DENTAL****SECTION****Variations of the Typical Amalgam Preparation**

Henry E. Fayle Jr, DDS, University of Texas, Dental Branch, Houston, Texas. J Pros Den 13(6): 1147-1150, November-December 1963.

Since there are variations in the amount of tissue destruction in individual teeth, the location of carious lesions, the alignment of teeth in the arch, and the level of the marginal gingiva, there must be some variation from the typical amalgam preparations for these teeth. This article describes modifications of the classical amalgam cavity preparations which fulfill the requirements for these special situations.

**Undermined Cusps.** Advanced caries often destroy the dentin underlying cusps, often making it necessary to remove one or more of the cusps partially or completely. When cusps are restored with amalgam, it is important to make sufficient reduction of the tooth to provide for at least 2 mm thickness of the amalgam in the restoration. This thickness is necessary for adequate strength. Whenever possible on a proximoocclusal preparation, the reduced cusp portion should be at a higher level than the pulpal wall (Fig. 1). This provides support for the matrix band and insures a full contour of the restoration. Three important factors in the restoration of a cusp with amalgam are: (1) sufficient reduction of the cusp (minimum of 2 mm) must be made; (2) the pulpal floor of the reduced cusp should be parallel to the direction of the enamel rods; and (3) no bevels should be used in the preparation. (1, 2)

If the entire lingual or buccal cusp of a bicuspid or the lingual or buccal cusp of a molar must be restored, pins should be used for reinforcement (3), (Fig. 1). If pins are used, the great danger is not so much in pulp exposure as it is in perforating the tooth below the level of the gingiva. While a depth of 3 to 4 mm for pins has been advocated (4), the author feels that a depth of 1.5 to 2 mm is adequate and safe.

**Caries At The Tip of the Cusp.** Dental caries may occur on the tip of a cusp. There is a tendency to obtain retention in these teeth by undercutting the walls of the preparation. This may leave unsupported enamel rods. Eventually, the unsupported enamel rods will fracture, leaving a rough, ditched margin.

The cavity must be prepared in the dentin. The cavity walls should be tapered in the same direction as the enamel rods. Then, for retention, a small inverted cone bur is used to undercut the base of the cavity which is in dentin (Fig. 2).

\* \* \* \* \*

Malposed Teeth. An ideal Class II amalgam preparation cannot always be prepared on a tooth which is in buccal or lingual version or rotated in the dental arch. The preparation must be varied to bring one proximal wall into a self-cleansing area and to keep the other proximal wall from being extended too far into the embrasure. If the tooth is in lingual version, the proximobuccal wall must be extended farther toward the buccal surface of the tooth than usual. To avoid weakening the tooth (and the restoration), the proximolingual wall is not extended as far toward the lingual surface as usual. When a tooth is in buccal version, the opposite modification is indicated. In the extension of the buccoproximal preparation on a tooth in lingual version, care must be exercised not to encroach on the pulp. This is done by cutting the wall at a slant, which is produced by extending the gingival wall more than usual, but without extending the occlusal portion of the proximal part of the preparation much more than usual (Fig. 3).

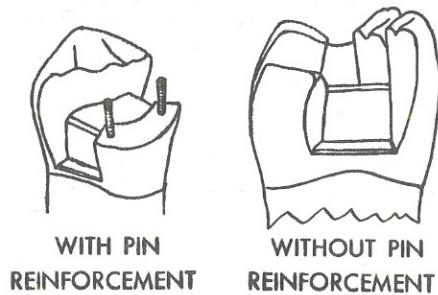


Fig. 1.—The height of weakened cusps should be reduced to allow a thickness of at least 2 mm. of amalgam for strength. The amalgam should be reinforced with pins when an entire cusp is to be restored.

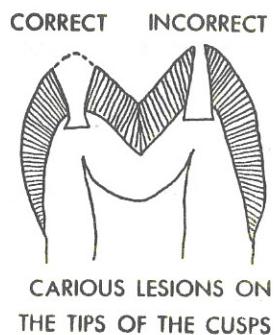


Fig. 2.

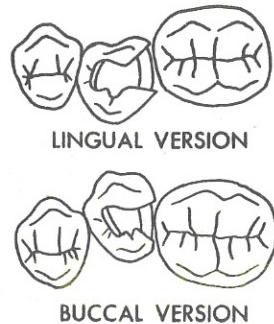


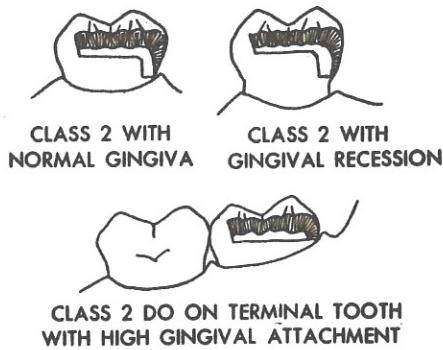
Fig. 3.

Fig. 2.—Caries on the tip of a cusp requires the cavity walls to be divergent so they are parallel to the enamel rods. The retention should be secured in the dentin.

Fig. 3.—The cavity form for malposed teeth must be extended to relatively caries-immune areas.

Variations in Level of Marginal Gingiva. In teeth with normal gingivae, the gingival margin of a Class II preparation should be placed below the free margin of the gingiva. In patients with periodontal disease or advanced gingival recession this would not be practical. In these instances, the gingival margin of the preparations should be extended only far enough to avoid contact with the

adjacent tooth at the gingival margin, and to remove all of the caries (Fig. 4). The gingival margin of the preparation is occlusal to the gingiva in these situations.



*Fig. 4.—Above left, When the gingival height is on a level with the cervix of the tooth, the gingival margin of the preparation should be within the gingival sulcus. Above right, When the gingival height is below the cervix of the tooth, the gingival margin of the preparation should be occlusal to the gingiva. Below, A proximo-occlusal preparation on a terminal tooth with a high gingival attachment or deep gingival sulcus does not require a distal step. The pulpal wall is extended to the distal surface of the tooth.*

Another variation is made necessary by the position of the marginal gingiva distal to a second or third molar when it is the terminal tooth in the arch and a disto-occlusal preparation is to be made in it. Often the gingiva is on a level with the occlusal surface of the tooth. If a typical disto-occlusal preparation is made with a proximal box and an occlusal step, the gingival wall is prepared far below the gingiva. Since there is no adjacent tooth, it is better to eliminate the step and extend the pulpal wall through the distal surface of the tooth. It is then possible to place the matrix on the tooth and cause little or no bleeding (Fig. 4).

It is neither possible nor desirable to attempt typical cavity forms for all carious teeth. The location and extent of caries may require modifications of the standard amalgam preparation. Malposed teeth and variations in the gingival height also require deviations from the conventional preparation. This article illustrates some of the problems and offers solutions based on the basic fundamentals of good cavity preparation.

#### References

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2. Gabel, A. B.: The American Textbook of Operative Dentistry, ed. 9, Philadelphia, 1954, Lea & Febiger, pp 297-298.
3. Markley, M. R.: Pin Reinforcement and Retention of Amalgam Foundations and Restorations, JADA 56: 675-679, 1958.
4. Roberts, E. W.: Crown Reconstruction With Pin Reinforced Amalgam, Texas DJ 81: 10-14, 1963.

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Personnel and Professional Notes

Special Announcement to Dental Corps Contributors. On page 2 of each issue of this publication, the reader will find a statement of the policy of the United States Navy Medical News Letter. In brief, this policy is to bring to the attention of its readers, timely up-to-date items of official and professional interest. Items of official interest include announcements of New Training Films, Training Programs, Newly Standardized Items, and special items such as the Dental Division's position on Hypnosis 39(3): 24-25, 40(1): 23-25, Oral Exfoliative Cytology 41(6): 22, 42(8): 22, and on Stannous Fluoride 42(7): 22-24. Publication of such items constitutes official announcement; it is each officer's responsibility to note these announcements.

A second aspect of official interest is the newsworthy item, such as professional meetings hosted by naval dental facilities, individual dental officer's appearance on scientific or professional programs, and election to officers or honors in scientific or professional organizations. The Editors of the News Letter are well aware of the fact that they may appear remiss in this category; however, with over 1700 dental officers in the field and fleet, it is impossible to publish such items unless the individual officers so honored submit the item of information to the Bureau of Medicine and Surgery. Therefore, each dental officer is urged to submit such items as rapidly as possible, for timely publication.

Abstracts of articles in scientific literature and reports of successful practices at naval activities (Protective Mouthguard Program at the U. S. Navy Academy 40(2): 23) are the second category of interest published in the News Letter. The Editors attempt to publish those which will be most beneficial to the readers. On those occasions when an individual dental officer feels that a specific article is of such wide interest that it should be brought to the attention of all naval dental officers, he should feel free to submit an abstract. While this practice has been current for some years, even more widespread participation is encouraged.

Naval Dental Corps Announces New Extension Course. The Naval Dental Corps announces availability of a new extension course, Advanced Speeds in Operative Dentistry (Nav Pers 10420). This course, the eleventh now offered in the extension education program, was developed by the U. S. Naval Dental School, Bethesda, Md.

The course of three assignments, covers the physical, biological, and clinical aspects of advanced speed instrumentation and includes H. R. Stanley's report, prepared for the Council on Dental Research of the American Dental Association, on the traumatic capacity of high speed instrumentation. A textbook, assignment book, and slides are included in the course supplied by the Naval Dental School.

The course, conducted by correspondence, is available without charge to all regular and reserve dental officers of the Armed Forces and to other members of the Federal Dental Services. Registration in the course or information about the program may be obtained from the Commanding Officer,

(Code E44), U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland, 20014.

Naval Examining Board To Meet Continuously. Effective February 1964, the Naval Examining Board will act continuously on applications for regular Navy as they are received in the Dental Division, Bureau of Medicine and Surgery. This is a change from previous practice wherein the Naval Examining Board previously met only semi-annually, in February and August. Candidates may expect to be notified of acceptance or rejection between four and six weeks after the application has been received by the Dental Division, Bureau of Medicine and Surgery.

TV Promotes Children's Dental Health Week. A coast-to-coast television program starring Dick Van Dyke, February 5, will highlight the 1964 observance of National Children's Dental Health Week. The February 5 program in the regular weekly "Dick Van Dyke Show" has been purchased by Procter and Gamble and turned over to the American Dental Association as part of the Children's Dental Health Week observance. All commercial time will be used by the Association to present dental health messages.

Local dental societies and individual dentists will be asked to participate in the advance promotion of the show so as to insure an even larger audience for the health messages. Advance publicity materials will include press releases, television spot announcements and school posters.

Interest Increasing in Use of Stannous Fluoride. The New London Naval Medical Research Laboratory's clinical evaluation of SnF<sub>2</sub> methods for caries prevention in naval personnel has recently been gaining increased interest among naval dental facilities. By invitation, CAPT F. P. Scola DC USN, principal investigator on this research subtask, lectured at the Naval Air Station, Quonset Point, Rhode Island, 21 November 1963 and at the Newport Naval Station, Rhode Island, on 22 November and the Naval Training Center at Bainbridge, Maryland on 5 December 1963.

Navy Graduates 66 Dental Technicians to the Fleet. The Naval Dental Technician School at the Naval Training Center, San Diego, California, held graduation ceremonies for the second group of Class "A" Dental Technicians (Basic) for fiscal year 1964, on 29 November 1963. The class of sixty-six well trained dental assistants, which included nine Waves, listened to an inspiring address by CAPT G. Courage DC USN, Chief of Dental Service, U. S. Naval Hospital, Camp Pendleton, Calif.

Floyd S. Marsee of Orlando, Florida was honorman of the class in which twelve completed the course with a grade average of better than 90. C. T. Baker DTC USN served as class sponsor. CAPT W. A. Monroe Jr. DC USN is Director of Class "A" School Training. CAPT B. H. Faubion DC USN is Officer in Charge of the school.



## PREVENTIVE MEDICINE

### Ready - Set - Snow

#### Safety Review 20(12): 7

Every winter, members of the National Safety Council's Committee on winter driving hazards study the effects of snow and ice to get the facts on winter driving hazards and how to drive safely under the worst conditions.

Industry, government, and educational institutions have contributed researchers, vehicles, and equipment. These experts kept going in the worst weather—so you can keep going when the going's bad. Here's how:

First, get your car ready.

1. Antifreeze. Flush cooling system, check for leaks and put in antifreeze.
2. Tires. Install your winter tires before the first snowfall and make sure all tires have good treads.
3. Chains. Always carry a pair of reinforced tire chains. In deep snow and ice, they help you stop and go more safely.
4. Windshield Wipers. Be sure your wiper blades are in good condition and have arm pressure of 1 ounce per inch of blade length to sweep snow and sleet off instead of sliding over it.
5. Heater-Defroster. Make certain the heater-defroster is capable of keeping the windshield clear of ice and interior fogging.
6. Lights. Be certain that both headlights work on upper and lower beams and that stoplight, taillights, and directional signals work also.
7. Brakes. Have them adjusted, relined if necessary; be sure brake linings are free of grease.
8. Winter Tuneup. An engine tuneup is essential to fast cold-weather starting and helps avoid stalling.
9. Muffler. A rusty, leaking muffler or exhaust pipe can be a carbon monoxide hazard, particularly if you are stalled in traffic, or a blizzard.
10. Safety Belts. Install and use safety belts—a must in all types of weather but especially valuable under hazardous winter driving conditions.

Then, get yourself ready. Know the six primary hazards of winter driving. The major hazards of winter driving are often referred to as inadequate traction and reduced visibility, but there are really six important points to consider:

1. Effect of temperature on starting and stopping traction.

2. Reduced visibility.
3. Inadequate traction to go.
4. Reduced ability to stop and steer.
5. Unexpected icy conditions.
6. Ice and snow made slippery by traffic.



Remember, stopping and steering are difficult on ice and snow. Poor traction makes stopping difficult and stretches stopping distances to 250 feet or more from just 20 mph. That's almost 10 times the distance you need to stop on dry pavement. Steering is also extremely delicate on ice and snow. Forces that tend to throw your vehicle into a skid are introduced as you steer into a turn. Any attempt to make a sudden steering change is extremely hazardous.

#### Snow Tires Versus Chains

The better snow tires give substantial advantage in loose snow and slush. But don't let this lead you to feel they afford similar advantage on ice or very hard packed snow, because snow tires are not much more effective than regular tires for these conditions.

Regular chains will provide good stop-and-go traction on snow and ice, but their side-skid resistance on ice is poor compared to reinforced tire chains. Reinforced tire chains (each link of the cross-chain is reinforced by projecting teeth or cleats) are very effective on glare ice in reducing braking distances, opposing side skids and increasing forward traction as compared with regular chains. Particularly noticeable in these improved chains is their much better resistance to side skids. — Safety Section, Preventive Medicine Division, BuMed

#### Courses Offered at the Disease Vector Control Center, Alameda, California

1. Four week course in "Disease Vector and Pest Control Technology."
    - a. This course is open to all active duty officers and enlisted personnel of the Armed Forces and to civilian personnel of the Armed Forces engaged in vector and pest control activities.
    - b. Attendance quotas for this course are allocated by communicating directly with the Officer in Charge, U. S. Navy Disease Vector Control Center, U. S. Naval Air Station, Alameda, California, 94501.
    - c. Billeting and messing facilities are available at the Naval Air Station, Alameda, for both military and civilian personnel attending the course.
    - d. Convening dates:
- 1964 - 6 Jan-2 Mar-4 May-6 Jul-8 Sep-26 Oct
- 1965 - 4 Jan-1 Mar-3 May-12 Jul-13 Sep-25 Oct

2. Fourteen day active duty training course in "Biology and Control of Vector-Borne Diseases."

- a. This course is open to Medical Department personnel and members of the Civil Engineering Corps, both officer and enlisted. Quotas can be obtained by making request to the appropriate Naval District Command.
- b. Quotas for the other military services are available by making request to the Bureau of Medicine and Surgery, Code 72, Department of the Navy, Washington, D.C., 20390.
- c. Billeting and messing facilities are available at the Naval Air Station, Alameda.
- d. Convening dates:

1964 - 2 Feb-5 Apr-7 Jun-9 Aug-11 Oct-8 Dec  
1965 - 7 Feb-11 Apr-6 Jun-8 Aug-10 Oct-5 Dec

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Emerging Animal Diseases

COL Fred D. Maurer VC USA, Dir of Path Div, USA Med Res Lab, Fort Knox, Ky. Military Medicine 128(4): 327-333, April 1963.

The distribution, spread, and potential of blue tongue, African horsesickness, African swine fever, lumpy skin disease and Rift Valley fever are discussed as examples of emerging diseases. Such infectious animal diseases, having a strong influence on the world's food supply and its distribution, are of major economic importance to the United States, her allies, and the underdeveloped countries.

The international control of such animal diseases would have far reaching benefits; it would increase the world's food supply, increase the efficiency of food production, free more people for other development, remove the threat of these diseases from countries now free of them, and greatly facilitate the distribution of food. Increased international trade in animal products would provide new purchasing power in underdeveloped areas, open new markets, and improve the economy of both agricultural and industrial countries.

Blue Tongue. Blue tongue of sheep and cattle is an example of a rapidly spreading, insect transmitted, viral disease. Hyperemia and cyanosis of the tongue are responsible for the name. This febrile disease is characterized by inflammation of the mucous membranes of the upper respiratory and digestive tracts with erosions in the nasal and oral cavities. Edema of the head and neck, nasal discharge, respiratory distress, lameness due to coronitis, and loss of condition are commonly observed. The case fatality rate with some African strains of virus approaches 40%; the single strain in the United States is mild, producing relatively few fatalities.

Blue tongue has been enzootic in South Africa since the first sheep were imported before 1800. Through the years it spread throughout most of Africa, but did not extend off the continent to Cyprus until 1924. Once in the Middle

East, through which there was more international traffic, blue tongue soon spread farther. About 1947, it appeared in Texas, but its identity was not confirmed until 1952, by which time it was discovered in several southwestern states. By 1960, diagnosis of blue tongue had been confirmed in 13 states. Blue tongue was reported in Israel in 1951, in Portugal in 1956, soon thereafter in Spain and Morocco, and in Pakistan and Japan in 1959 and 1960.

Once established, the disease is difficult and costly to control. Nearly 1 1/2 million doses of vaccine were made in the United States in 1959, and in South Africa commercial sheep raising is dependent upon the routine vaccination of 35 million sheep. Immunization is further complicated in South Africa by the presence of 19 immunologically different strains of virus, against which they use a 12 strain polyvalent vaccine. The United States is still vulnerable to 18 of these strains. The rapid spread of blue tongue by the ubiquitous Culicoides reveals their capability as vectors.

African Horsesickness (AHS). African horsesickness, an insect-borne, febrile, viral disease of horses, mules, and donkeys, may be clinically dominated by an acute, rapidly fatal pulmonary edema or cardiac lesions with localized inflammatory edema of the head and neck. The cardiac changes include hemorrhage, edema, myocarditis, and focal necrosis. Hydropericardium, pleural effusion and gastritis are common.

Known in Africa since 1700, AHS has been such a serious plague that horses never became the principal draft animal as in most western countries. During some years, nearly half the horse population died of this disease.

Transmitted by Culicoides, the disease is seasonally associated with the presence of these insects, occurring after the rains in low, relatively moist areas. The disease has become enzootic in much of South and Equatorial Africa and made occasional seasonal forays into the northeastern areas of Africa. In the fall of 1959 it spread to Iran, Afghanistan, and West Pakistan. It persisted over the winter to reappear in those 3 countries in the spring of 1960 and rapidly spread to India, Iraq, Syria, Turkey, Cyprus, Lebanon, and Jordan causing losses estimated at 300,000 equine animals with case fatality rates of about 80% in horses, and 60% in mules and with minor losses in burros. In the summer of 1961, it reappeared in 5 of these countries.

The recent outbreak of AHS in the Middle East would have been even more serious had it not been for the excellent work previously done in South Africa. There, during the last 30 years, they adapted the virus to mice, distinguished some 42 immunologically different strains of virus and developed an effective polyvalent attenuated live virus vaccine.

With some 12 million equine animals in the Middle East and no AHS vaccine being prepared there at the time of the 1959 outbreak, the need for vaccine was so great that the 1960 outbreak was over before adequate amounts of vaccine could be produced or obtained by most countries involved with the exception of Iran and Turkey. Even though methods for control are known, it is obvious that international cooperation in their application is essential if the spread of such diseases is to be halted promptly and losses minimized.

African Swine Fever (ASF). African swine fever is an acute, febrile, highly contagious, virus disease of domestic swine, characterized by a short

course and essentially 100% mortality. Although producing clinical changes and lesions which closely resemble American hog cholera, it is caused by an immunologically different virus. Known in Africa since 1910, it has long prevented the commercial raising of swine in much of southern and Equatorial Africa. Carried by normal appearing African wart hogs and the rare domestic swine which survive, it persists in spite of the very high mortality. Transmission is primarily by direct contact; insects are not believed to play significant roles in transmission. The virus is unusually hardy, having been reported to survive in uncooked Spanish sausage for 3 months. Numerous immunologically different strains of the virus have contributed to the lack of an effective vaccine.

In 1957, ASF spread to Portugal, resulting in the loss of over 48,000 swine from the disease and control slaughter up to December 1961. In the spring of 1960, ASF appeared in Spain and quickly spread over most of the country resulting in losses from the disease and control slaughter of 165,390 animals up to December 1961. Pork products are important elements of the diet in these countries and the economic loss is of major significance. These outbreaks give evidence that ASF, in the absence of a vaccine, is the most potentially dangerous of the swine diseases. Its presence on the Iberian peninsula greatly increases the threat to the rest of Europe and the western hemisphere. The clinical similarity to hog cholera increases the difficulty of its prompt recognition in a newly infected country. As evidenced by the rapid spread of vesicular exanthema of swine throughout the United States in 1952, the way in which American swine are moved en masse from breeder to feeder, and to market, provides ample opportunity for the rapid dissemination of a disease like ASF. Essential to control is an alert veterinary service trained in the recognition and prompt confirmatory diagnosis of the disease. The need for an effective vaccine is paramount.

Lumpy Skin Disease. This febrile, insect-borne, virus disease of cattle provides an excellent example of a new, local disease problem which grew to handicap the cattle industry of a whole continent through lack of international disease control. First recognized in Northern Rhodesia in 1929, the opportunity to eradicate it was missed during the next 15 years before it spread to nearby Southern Rhodesia, Bechuanaland, and the Union of South Africa. There, apparently disseminated by more capable or more numerous insect vectors, it spread rapidly throughout those countries and on to Swaziland, and Mozambique. During this period of rapid transmission an estimated 8 million animals were affected and in some districts the case fatality rate reached 75%. In areas where the disease has become enzootic the case death rate is usually less than 5% but the loss of weight, reduced milk production, and damage to hides make affected animals unprofitable.

Hide damage results from raised cutaneous nodules which characteristically develop in large numbers during the acute disease. Similar nodules, some of which become necrotic, may also occur in portions of the respiratory and digestive tracts. Numerous epithelial cells in these nodules are swollen, frequently vacuolated, and reveal cytoplasmic inclusions. The nodular lesions are

accompanied by a generalized lymphadenitis with gross enlargement of the lymph nodes.

Two strains of virus, the Allerton and Neethling strains, have been shown to produce lumpy skin disease. The Neethling strain is more pathogenic and the one of major significance. It has now been grown on bovine tissue culture wherein serial passage led to attenuation and the production of an efficient vaccine. This virus is immunologically so closely related to sheep pox that in Kenya the sheep pox virus has been used to immunize cattle against it.

Now having spread over much of South and Central Africa and off the continent to Madagascar by insect vectors, this formidable disease appears to have such a potential for spreading that only international cooperation will lead to its control.

Rift Valley Fever (R. V. F.) The current large scale importation of primates from Africa poses a new hazard for the introduction of R. V. F. into the United States. This highly infectious, insect-borne, febrile, viral disease of sheep, cattle, and man has spread throughout much of Africa and is a serious hazard to other continents. When it spread from Equatorial Africa to the Union of South Africa in 1951, it destroyed over 100,000 sheep with a case fatality rate in lambs of 90%. Losses of cattle ranged up to 25% of the cases and there were an estimated 22,000 human cases. Fortunately, the virus usually produces only a relatively mild influenza-like disease in man except for occasional sequelae of iridocyclitis.

At least 7 species of African monkeys have been found to carry antibodies against R. V. F. Experimentally, it usually produces a non-clinical virus in primates which lasts for several days. Since most primates are shipped to the United States via air, there is ample time for a R. V. F. infected animal to arrive here with a viremia.

With the United States having Culex and Aedes mosquitoes which are potential vectors, the stage appears to be set for the entry and dissemination of R. V. F. Other countries with potential vectors face the same hazards when primates are imported without an adequate period of insect-free quarantine and surveillance.

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#### Salmonella derby Gastroenteritis

DHEW PHS, Public Health Reports 78(10): 855, October 1963.

In March 1963, clusters of laboratory isolations of Salmonella derby reported by State health departments alerted the Public Health Service's Communicable Disease Center in Atlanta to an outbreak of S. derby gastroenteritis. The reports showed a clustering of such isolates in the New York City area. Five cases of diarrhea in one hospital prompted an investigation by the New York City Health Department with CDC assistance.

Similar clusters of S. derby isolations subsequently appearing in New York State, Pennsylvania, New Jersey, and Massachusetts mainly represented

cases of S. derby gastroenteritis acquired in hospitals. Of 775 S. derby isolations reported to CDC from March 1 to July 8, 1963, from 25 States and the District of Columbia, 601 represented hospital-associated cases.

By early April 1963, hospitals, city and State health departments, the CDC, and the Food and Drug Administration had joined the search for a source common to the hospitals with patients harboring S. derby. Analysis of case records and interviews at these hospitals ruled out human carriers among physicians, nurses, and other hospital personnel; medications were also eliminated as a source. A careful study of all foods revealed that raw or undercooked eggs had been consumed by more patients than any other single food item or medication within the 48 hours before onset of illness. Patients who developed S. derby gastroenteritis were also apparently more likely to consume raw or undercooked eggs than the total hospital population at risk.

With this lead, possible egg sources of 13 of the affected hospitals in three States were investigated. The number of S. derby organisms recovered from cracked eggs from farms in one of the geographic areas supplying these hospitals led the Public Health Service to issue this recommendation:

There is sufficient epidemiologic and bacteriological evidence to suggest that everyone should avoid buying and using cracked or unclean eggs. Persons who are ill, especially infants, the elderly, and persons suffering from gastrointestinal disease or malignancies, should not be fed raw or undercooked eggs. An undercooked egg is one in which the white is not firm.

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#### Epizootics of Sylvatic Plague in Colorado

Vector Control Briefs DHEW PHS CDC, Atlanta, Ga. (10): 2, November 1963.

Widespread epizootics of plague occurred in Colorado during the spring and summer of 1963. In the early spring, plague was detected in a large colony of prairie dogs in Park County, southwest of Denver. An epizootic soon developed, and by early June the prairie dog colony was completely wiped out. Plague was subsequently detected in a dead prairie dog picked up on the Lowry Air Force Missile Site just east of Denver, and another epizootic developed in this area. The Colorado State Department of Public Health inaugurated a program of surveillance and vector and rodent control to prevent the introduction of plague into the domestic rat population of the Denver municipal area. To date, there have been no isolations of plague bacilli from fleas or rodents collected in this area. The Greeley and San Francisco field stations of the Disease Ecology Section, Technology Branch, CDC, are collaborating with the State Department of Public Health and the U.S. Air Force in studying the epizootic. The State Aids Section has provided assistance in the development of vector and rodent control measures.

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**Did You Know:**

That an electric shock is used to safely extract scorpion venom? Scorpions are placed in a large jar, introducing CO<sub>2</sub> into the jar to anesthetize, this is usually effective within 3 to 5 minutes. Each scorpion is placed in a specially modified mousetrap, with only the telson and 1 or 2 terminal segments protruding beyond the crossbar of the trap; 2 electrodes are applied to the post-abdomen. By this stimulation the venom is usually emitted immediately onto a glass microscope slide. The scorpion is released from the trap and transferred to a holding jar to await return to the original colony. It has been possible to collect venom from as many as 400 scorpions on a single slide. The pooled venom can then be dried and preserved.

This method has made it possible to maintain a laboratory colony of over 5,000 live adult scorpions and to study the secretion and composition of the venom. As much as 66.4% of the venom content of the telson could be obtained by electrical stimulation. (1)

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That a Symposium on Venereal Disease Control, which was convened by the WHO Regional Office for Europe, and held in Stockholm, Sweden, from 24 to 28 September 1963, was attended by senior health administrators and by epidemiologists responsible for national venereal disease control programs from 18 European countries?

The Symposium's main purposes were to bring before health authorities present and long-term trends in gonococcal and syphilitic infections in European countries, in view of the rising incidence of these diseases in recent years as reported from many parts of the world, and to study and discuss the methods presently in use in these countries for the control of venereal disease with a view to possible improvements. Among epidemiological aspects of the problem, the Symposium considered ways of promoting inter-country cooperation in combating venereal disease, and explored the possibility of strengthening existing public health measures by intensifying their social and educational aspects and improving legislation relating to venereal disease control. (2)

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That human consumption of overwintered cereals (millet, wheat, barley) causes a disease known as septic angina? The factors conducive to the formation of toxins in cereals that have passed the winter under snow cover were studied

from 1943 to 1950 in the Orenburg district of the Russian Confederate Republic of the USSR. The toxic principles persisted in stored millet grain after 6 year's storage. Only grain in contact with soil during the winter-spring period developed toxicity. Soil fungi were found to be able to produce various degrees of toxicity, species of Fusarium being most highly toxic. The toxic principle occurred about as frequently in the soil as in the cereal grains, but vegetative parts of the plants were less frequently toxic. (3)

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That in 1921, the Rocky Mountain Laboratory of the PHS was founded in Hamilton, Montana, to study Rocky Mountain spotted fever? Since that time, this Laboratory has evolved from a few cabins into a modern \$3 million research complex?

During the early days, a Rocky Mountain spotted fever vaccine was developed for immunizing man; manufacture of this was cumbersome, expensive and dangerous. Later, a chicken-embryo type of vaccine was developed which is now the standard method of immunization.

This laboratory conducts extensive research on Q fever and other rickettsial infections, zoonoses of regional importance, transmission of disease agents by certain vectors, the mechanisms of allergy and their roles in disease, microbial proteins and nucleic acids, production of vaccines for the prevention of tuberculosis, the structure and biologic activity of endotoxins, the role of morphological elements of microorganisms in immunity and related phenomena, the encephalitides, Colorado tick fever, and the relation of viruses to chronic disease. (4)

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That inadequate nutrition and poor sanitation are the cause of intestinal diseases that decimate 2/3 of the world's population, and that in large areas, 1 to 5 infants out of 10 fail to reach the age of 1 year?

With a view to improving the situation, the World Health Organization convened an expert committee on the control of enteric diseases, which finished its work in Geneva on 18 November 1963. (5)

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That on 8 October 1963, the Surgeon General of the Public Health Service approved the establishment of the Aedes aegypti Eradication Branch within the Communicable Disease Center, Atlanta, Ga. Dr. Donald Schliessman, formerly with the Epidemiology Branch, and more recently with the Technology Branch, will be chief of the new branch. (6)

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1. WHO Chronicle, Notes & News, A Safe Method of Extracting Scorpion Venom 17(10): 383-384, October 1963.

2. WHO Chronicle, European Symposium on VD Control 17(10): 386, October 1963.
3. Public Health Engineer Abstracts, Abst. No. 1213, XLIII (7): 215, July 1963.
4. Veterinary Public Health Notes USDHEW PHS CDC Atlanta, Ga. October 1963.
5. WHO Press Release, SEAR 738, Regional Office for Southeast Asia, 19 November 1963.
6. Veterinary Public Health Notes USDHEW PHS CDC Atlanta, Ga., Aedes aegypti Eradication Branch Established at CDC, pg 14, October 1963.

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### Chloramphenicol Resistance of Salmonella

WHO Chronicle 17(5): 185, May 1963.

In pursuance of a proposal made by the WHO Expert Committee on Antibiotics (1), the National Salmonella and Escherichia Center in Kasauli, Punjab, has tested the sensitivity to chloramphenicol of 867 Salmonella strains isolated from patients and from animals in various parts of India over the period 1959-1961 (2). These strains belonged to 24 serotypes, but almost 80% were Salm. typhi while another 7% were Salm. paratyphi A. As recommended by the Expert Committee, the determination of sensitivity was made by the dilution method. The concentrations used were 1, 2, 4, 6, 8, 12 and 16 mg of chloramphenicol per ml of nutrient agar, sensitivity plates being prepared by pouring 25 ml of chloramphenicol-agar mixture into Petri dishes. Each dish was divided into 4 quadrants and each quadrant inoculated with a distinct strain that had been grown for 18 hours at 37° C on nutrient broth. The culture plates were then incubated at 37° C 24 hours. As a control, a parallel series of tests was carried out on each strain without chloramphenicol.

About 40% of the Salm. typhi strains were resistant to a chloramphenicol concentration of 2 mg/ml of medium but susceptible to 4 mg. A further 20% were resistant to concentrations below 6 mg/ml and about 9% to concentrations below 16 mg. There was a gradual increase in resistance from 1959 to 1961. Of the Salm. paratyphi A strains, approximately 50% were susceptible to concentrations of 4 mg/ml or more and another 30% were killed when the concentration was increased to 6 mg/ml. The remaining serotypes showed a similar pattern of resistance, the majority of the strains in each case being susceptible to 4-8 mg of chloramphenicol per ml of medium.

### References

1. World Health Organization Techn Rep Ser 1961, pg. 210.
2. Agarwal, S. C. (1962) Bull World Health Organization 27: 331.  
(Hlth Prac Br, Prev Med Div, BuMed)

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Evaluation of Malathion Dust  
for the Control of Body Lice

William W. Barnes\*, B. F. Eldrige, J. H. Greenberg, and S. Vivona. J Econ Entom 55(5): 591-594, October 1962. Summary from Pub Hlth Eng Abstr 453-691, XLIII(4): 92, April 1963.

From January 9 through March 6, 1961, a field evaluation was conducted at a Republic of Korea Army prison farm near Seoul, Korea, to determine the efficacy and safety of 1% malathion dust used to control body lice (Pediculus humanus humanus L.). One ounce of dust applied either semimonthly by hand or monthly by power duster gave virtually 100% control. Monthly applications of the same dosage of 1% lindane powder gave poor control. Lice from the test subjects were resistant to DDT but susceptible to lindane and malathion as determined by laboratory tests. Physical examination and weekly red blood cell cholinesterase determinations revealed no adverse effects from malathion dust used on 200 test subjects.

\* Army Environmental Hygiene Agency, Army Chemical Center, Md.

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Tularemia, Spotted Fever, and Murine Typhus  
1958-1962

Vector Control Briefs, DHEW PHS CDC, Atlanta, Ga. Vectors and Vector-Borne Diseases (10): 4, November 1963.

The "Annual Supplement—Reported Incidence of Notifiable Diseases in the United States," 1962—Morbidity and Mortality Weekly Report 11(53), released 16 September 1962, contains interesting information on the incidence of tularemia, spotted fever, and murine typhus as follows:

<u>Disease</u>	<u>Number of Reported Cases</u>				
	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>
Tularemia	587	459	390	365	328
Typhus fever, flea-borne (murine)	71	51	68	46	32
Typhus fever, tick-borne (Rocky Mt. spotted)	243	199	204	219	240

The number of cases of tularemia has shown a continued decrease since 1948. Cases of tularemia occur most frequently in Southeastern United States, with Arkansas often the leading State. The Morbidity and Mortality Weekly Report for July 5, 1963, 12(26): 214-215, contains the following significant paragraph based on cases reported during 1960 and 1961:

"The seasonal distribution of tularemia cases shows 2 distinct peak periods of activity. The increased incidence during summer months is due primarily to cases acquired from infected ticks and flies, while the late fall and winter peak which occurs each year represents those cases caused by exposure to infected wildlife."

The 32 cases of murine typhus represents the smallest number reported to the Public Health Service since 1920. Texas continued to report the largest number, 12, followed by Georgia, with 5 cases.

Rocky Mountain spotted fever continues to be reported more often from the Atlantic Coast and Southeastern States than the Rocky Mountain area. In 1962, 7 cases were reported from Montana as compared with 45 in Virginia, 35 from North Carolina, 21 from Tennessee, 16 from Maryland, and 11 each from New York, Alabama, and Oklahoma.

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#### Isolation of Rickettsia rickettsii from Wild Mammals in Western Montana

W. Burgdorfer, V. F. Newhouse, E. G. Pickens, and D. B. Lackman. Ecology of Rocky Mountain Spotted Fever in Western Montana. Amer J Hyg 76(3): 293-301, November 1962. Summary from Pub Hlth Eng Abstr XLIII(4): 87, April 1963.

In studies of the ecology of Rocky Mountain spotted fever rickettsiae conducted on the west side of the Bitter Root Valley in western Montana, golden-mantled ground squirrels (Citellus lateralis tescorum), chipmunks (Eutamias amoenus), Columbian ground squirrels (Citellus columbianus columbianus), woodrats (Neotoma cinerea cinerea), and snowshoe hares (Lepus americanus) were examined serologically for complement-fixing antibodies to Rickettsia rickettsii. Attempts were also made to isolate strains of this agent from blood and spleen tissues.

Complement-fixing antibodies were detected in 23 of 33 golden-mantled ground squirrels, 5 of 7 chipmunks, 6 of 13 Columbian ground squirrels, and in 24 of 55 snowshoe hares. No evidence of previous spotted fever infection was noted in sera of 17 woodrats.

Seven strains of rickettsiae were recovered and were identified as highly virulent R. rickettsii based on their behavior in guinea pigs, embryonated hens' eggs, and in complement-fixation tests. One strain was isolated from the blood of a young snowshoe hare, 1 strain from the spleen of a young golden-mantled ground squirrel, and 5 strains from spleen tissues of young chipmunks. These strains of spotted fever rickettsiae are the first isolations made from naturally infected wild mammals west of the Mississippi.

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**RESERVE****SECTION**Research Reserve Seminar\*

The Research Reserve is pleased to announce the scheduling of an additional Research Reserve Seminar for this fiscal year—Nuclear Sciences Seminar in Health Physics, Brookhaven National Laboratory, Upton, New York, convening 2 March 1964. Quotas for this seminar have been allocated to the following Naval Districts: 1, 3, 4, 5, 6, 8, and 9. Quotas may be given to the West Coast Naval Districts upon request of the respective Commandants. Reservists who request this duty should have at least a Bachelor's degree in one of the sciences or engineering.

The profession of the Health Physicist developed out of necessity with the coming of the nuclear age. The term Health Physics is sometimes equated with Radiation Safety, but this is an inadequate definition. The Health Physicist thinks of his profession as being concerned with the study, evaluation and control of radiation hazards. The modern nuclear-age Navy needs reservists who have been indoctrinated in the basic tenets of the Health Physics profession. The program of the 10th Brookhaven Seminar has been laid out with this in mind.

The program will cover the Health Physics profession with special attention to the needs of the Navy and its reservists. These will include Interactions of Radiation and Matter, Biological Effects of Radiation, Personnel Monitoring and Radiation Surveys, together with practical applications of problems in reactors, laboratories and hospitals. The facilities and personnel of Brookhaven National Laboratory will be augmented, so that adequate coverage will be given to these problems as associated with shipyards, naval vessels, and nuclear energy and man in space. Tours of Brookhaven's nuclear facilities will be included.

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\* Submitted to the Medical News Letter by Research Reserve, Office of Naval Research, Washington, D. C.

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